

THE INVENTION AS CLAIMED IS

1. A vehicle seat linkage assembly including a threaded rod defining a longitudinal axis, the linkage assembly comprising, in combination:

a first link having a portion forming an enclosed aperture;

a second link adjacent but spaced away from the first link, the second link having a portion forming a slot, the slot having a circular portion, the circular portion and the enclosed aperture defining a lateral axis extending between the first link and the second link; and

a drive nut threadably engaging the rod, the drive nut having one lateral projection and another lateral projection opposite the one projection and a portion engaging the rod, the drive nut and rod being movable so that the longitudinal axis is positioned relative to the lateral axis to insert the one projection into the slot and to position the another projection adjacent but spaced away from aperture while one lateral projection remains in the slot, the another projection having a width substantially the same as the bore of the aperture, thereafter moving the another projection to insert the another projection into the aperture while the one lateral projection remains the slot.

2. A linkage assembly as claimed in claim 1 wherein the slot and the aperture are in alignment with one another.

3. A linkage assembly as claimed in claim 1 wherein the slot having a portion forming an arcuate portion and a guide portion in communication with the arcuate portion.

4. A linkage assembly as claimed in claim 1 wherein the another projection has a shoulder portion adjacent the bore.

5. A linkage assembly as claimed in claim 1 wherein the slot further has a pair of opposing straight sided portions in communication with the circular portion, the circular portion forming first axis of rotation and the aperture forming a second axis of rotation that defines the lateral axis between the first link and the second link.

6. A linkage assembly as claimed in claim wherein the longitudinal axis and lateral axis are substantially normal to each other when the one lateral projection is inserted into the slot.
7. A linkage assembly as claimed in claim 1 wherein the second lateral projection has a shoulder portion adjacent a circular portion, the circular portion being sized to fit into the aperture, the shoulder portion is adjacent the aperture in the second link when the second lateral projection is inserted into the second link.
8. A linkage assembly as claimed in claim 1 wherein the drive nut has an internal threaded portion, the rod having an external threaded portion.
9. A linkage assembly as claimed in claim 1 wherein the enclosed aperture has an inner arcuate portion forming at least 85% of the inner surface of the aperture.
10. A linkage assembly as claimed in claim 1 wherein the enclosed aperture has an inner portion forming at least 90% of the inner surface of the aperture.
11. A method of connecting a first seat member to a second seat member and adapted to move relative to one another to adjust their relative positions by a threaded rod defining a longitudinal axis, the method comprising:
 - providing a threaded drive nut adjacent to one of the first seat member and the second seat member, the drive nut having one lateral projection end, another lateral projection end opposite the one projection end and a threaded portion engaging the rod,
 - providing a pair of spaced apart links on one of the first seat member and the second seat member, each of the pair of links having an aperture and forming a planar surface and transverse axis extending between each of the planar surfaces of each of the pair of spaced apart links;
 - moving the drive nut and rod so that the longitudinal axis is positioned so as to insert the one lateral projection end into the slot and the another lateral projection end is positioned in an adjacent but spaced away position relative to the aperture while the one lateral projection end remains in the slot, the another lateral projection end having width substantially the same as the bore of the aperture;

moving the another projection end relative to the transverse axis to insert the another projection end into the aperture while the one lateral projection end remains in the slot; and

rotating the drive nut to engage each aperture in each of the pair of spaced apart links so that the drive nut is captured in and prevented from disengaging each of the pair of links when the drive nut is activated to move one of the first and second frame members relative to one another.

12. The method as claimed in claim 11 wherein the another lateral projection end has a shoulder portion and a circular adjacent the shoulder portion, the circular portion being sized to fit into the aperture, the shoulder portion is adjacent the aperture in the second link when the second lateral projection is inserted into the second link.

13. The method as claimed in claim 11 wherein the aperture in on lateral projection is enclosed, the other lateral projection is a key hole slot opening, the opening has a circular portion and a pair of opposing straight sided portions in communication with the circular portion.

14. A method as claimed in claim 11 wherein the aperture in one projection has a key hole slot opening and a circular portion, the opening has a pair of opposing straight sided portions in communication with the circular portion, the one end and the opposite end of the drive nut each have a portion forming a circular section with a pair of opposite straight sides, the width between the pair of opposite sides being of size to pass through the pair of opposing straight sided portions of the slot opening in the one of the projection end and into the enclosed aperture in the other of the projection end and the engagement of the drive nut or the threaded nut prevent the drive end from moving laterally to disengage the enclosed aperture.

15. A seat adjuster having first and second frame members adapted to move relative to one another to adjust the position of the first frame member relative to the second frame member, the adjuster comprising, in combination:

a first link attached to the first frame, the first link having a portion forming an enclosed aperture;

a second link attached to the first frame in a spaced apart relationship to the first link, the second link having a portion forming a slot, the first link and the second link are

in alignment with each other and defining an alignment axis and a laterally extending axis that is normal to the alignment axis and between the first link and second link; and

a drive nut adjacent one of the first link and the second link, the drive nut having one end, another end and portion extending between the one end and the another end, the portion defining a longitudinal axis, the drive nut being positioned offset the laterally extending axis to engage the slot, then while the drive nut is engaged to the slot, moving the drive nut relative to the laterally extending axis to insert the another end into the enclosed aperture, wherein after the drive nut is disposed in both the slot and aperture, the nut is rotated to prevent the one end of the drive nut from disengaging the slot while the another end is captured in the enclosed aperture.

16. The seat adjuster as claimed in claim 15 wherein the slot has a portion forming a circular portion and a pair of opposing straight ended portions in communication with the circular portion, the circular portion and the enclosed aperture form a transverse axis that is substantially normal to the alignment axis.

17. A linkage assembly adapted for use with a vehicle seat frame, the linkage assembly comprising, in combination:

a first member adjacent the seat frame;

a second member adjacent but spaced away from the first member, the first member has a first aperture and the second member has a second aperture, the first aperture and the second aperture each has a portion forming an inner peripheral surface and defining a transverse axis extending between the first member and the second member; and

a drive nut adjacent the first and second members, the drive nut has a body portion, a longitudinal axis extending there through and a pair of ends extending laterally of the longitudinal axis, the drive nut is positioned such that the longitudinal axis is moved offset relative to the transverse axis and the one end is inserted into the first aperture and then, while the one end remains engaged in the aperture, the other end is moved laterally so as to be inserted into the second aperture, to prevent the withdrawal of the other end of the drive nut from the second aperture and then the drive nut is rotated to capture the one end in the first aperture.

18. A linkage assembly according to claim 17 further comprising :

a drive motor connected to the drive nut; and

a linkage assembly as claimed in claim 1 wherein the enclosed aperture has a portion forming an arcuate inner surface in the first link to engage a section of one end of the drive nut to encapsulate and lock the drive nut therein.

19. A linkage assembly as claimed in claim 17 wherein one of the pair of end of the drive nut has a circular section with at least one flattened side, the circular section is of a size to engage a portion of the first aperture.

20. A linkage assembly as claimed in claim 17 wherein the second aperture has a portion forming an inner peripheral surface in the first member, the inner surface includes an arcuate portion forming at least 90% of the inner surface.